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Experimentelle Untersuchungen über die Helligkeit der Farben.
EDUARD GRUBER. Wundt's Philos. Studien., IX. 1893, 429-446.

The method used by Gruber for determining the relative bright-
ness of colors was the natural one of direct comparison, applied,
however, in the form of the method of minimal change. Two color-
tops, one carrying a gray disk, *i. e.*, a black and white one *(A)*,
and the other a colored disk *(B)*, were set up before a dark back-
ground. The gray disk *(A)* was at first set decidedly too dark
and gradually brightened till it seemed to the observer of equal
brightness with the colored disk *(B)*. The condition of *A* was
noted and then made much too light and gradually darkened till a
match was again reached. The average of the two determinations,
repeated several times on each side, gave the brightness of the color.
The experiments made in this way, after a little practice, yielded
excellent results, except in a few cases where the observers seem
to have become habituated to a particular intensity of gray and to
have judged by its return rather than by an unbiased comparison.
For the special precautions employed the original must be consulted.

The author also investigated the Purkinje phenomenon and the
effect of changes in saturation on brightness. The experiments on
the first, so far as they went, gave results in accord with the similar
experiments of Hillebrand. With decreased illumination, the blue
and green not only lost less in brightness, as compared with the
red and yellow, but less even than the neutral gray. The effect of
change in saturation was tested by replacing a portion of the color
on *A* by an equally luminous gray, but no change in the total
brightness was to be observed. Experiments on a color-blind
observer (red-green blind), made in the hope of deciding whether
green appeared to him relatively brighter than it did to an observer
with a normal eye, which might be expected on Hering's theory,
unfortunately had to be discontinued before clear indications ap-
peared. It is, perhaps, only fair to add that the same method of
measuring the brightness of colors was used by Rood more than
fifteen years ago; see *American Journal of Science*, Ser. 3, XV. 1878,
81-82.   E. C. S.

On a Color System. O. N ROOD. American Journal of Science,
Ser. 3, XLIV. 1892, 263-270.

In this article Professor Rood describes a method of working out
a reproducible color system with the color-top, provided that there
is at hand a single disk of known hue and power of saturation, *i. e.*,
efficiency in the formation of gray when mixed with its comple-
ment. By combination with the standard disk, the power of
saturation of its complement and of colors differing but slightly
from that, are determined, and from these in turn the powers of
saturation of other disks, till a considerable range in the color scale
has thus been measured. When three colors widely enough separ-
ated to form the corners of a color triangle have been reached, such
a triangle may be constructed in the usual way from the equation
giving their mixture for gray, taking into account also their power
of saturation, as already determined. This forms the basis of the
system and other colors are assigned places in it in the usual way.
For the details of the method and the discussion of the nature of
the system thus constructed, the reader is referred to the original.
The author unfortunately does not specify how the *hues* to be placed
at the corners of this color triangle are to be selected, whether by
reference to the spectrum, to well-known pigments, or in some
other way—an omission that would have to be supplied before any-